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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,522	02/10/2004	Matthew G. Goodman	ASMEX.433A	1057

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EXAMINER

MACARTHUR, SYLVIA

ART UNIT	PAPER NUMBER
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1763

DATE MAILED: 08/24/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,522

Applicant(s)

GOODMAN ET AL.

Examiner

Sylvia R. MacArthur

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15,22-32,34 and 38-43 is/are pending in the application.
- 4a) Of the above claim(s) 12-15,22-32 and 34-43 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 38-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. The request filed on 6/30/2006 for an RCE is accepted and the action based on the amendment to the claims is below.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 8, 10, and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Kurita et al (US 2005/0016454).

Regarding claim 1: Kurita et al teaches a dual substrate loadlock process equipment wherein the apparatus comprises a reaction chamber(load lock 30), a first load platform (upper plate 54), and a second load platform(plates 56, 52, or 76). The first load platform is mounted outside of the second load platform and the first load platform is fixed relative to the second load platform see [0036].

Regarding claims and 3: The first platform is directly above the second platforms,

Regarding claim 8: The second platform is a susceptor.

Regarding claim 10: This claim does not present further structural limitations, instead it states the intended use of the present invention. Note that the intended use does not structural limit an apparatus from its prior art. The apparatus of Kurita is inherently capable of performing these process limitations.

Regarding claim 11: The apparatus of Kurita further comprises a heat source 94.

4. Claims 1-3 and 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Asakura et al (US 2002/0166509).

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Regarding claims 1-3: Asakura et al teaches a film forming device comprising a reaction chamber (vessel 32), a first load platform (ring body 59) and a second load platform (stage 36). The first load platform is mounted outside of the second load platform and the first load platform is fixed relative to the second load platform, see Fig. 1. Note the first platform is higher than the second load platform and substantially directly above the second load platform.

Regarding claim 8: The second platform is a susceptor.

Regarding claims 9 and 11: The second load platform features a heat source 38.

Regarding claim 10: This claim does not present further structural limitations, instead it states the intended use of the present invention. Note that the intended use does not structural limit an apparatus from its prior art. The apparatus of Asakura et al is inherently capable of performing these process limitations.

5. Claims 1-6, 8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Satoh (US 6,435,798).

Regarding claim 1: Satoh teaches a semiconductor processing apparatus with substrate supporting mechanism wherein the apparatus comprises a reaction chamber, a first load platform (support members 12), and a second load platform (susceptor 2).

Regarding claim 2: The first load platform is higher than the second load platform, see Figure 3.

Regarding claim 3: The second load platform is substantially directly above the second load platform, see Figure 3.

Regarding claim 4: The first load platform is at least about 10 mm higher than the second load platform, see col. 5 lines 59-67.

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Regarding claim 5: The first load platform comprises a plurality of support pins, see Figures.

Regarding claim 6: The first load platform comprises three support pins, according to col.6 lines 18-20 there are at least three through holes, note the support pins fit into each through holes, thus there are at least three pins.

Regarding claim 8: The second load platform is a susceptor.

Regarding claim 10: This claim does not present further structural limitations, instead it states the intended use of the present invention. Note that the intended use does not structural limit an apparatus from its prior art. The apparatus of Satoh is inherently capable of performing these process limitations.

6. Claims 38-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Lee et al (US 5,842,690).

Regarding claims 38 and 43: Lee et al teaches a semiconductor wafer anchoring device wherein the apparatus comprises a reaction chamber (not shown however the support assembly of Lee et al is inherently used in a reaction chamber) which is the location where semiconductors are formed. Lee also features a first means (clamp 50) for supporting the substrate during processing and a second means for supporting the substrate during processing (chuck/susceptor 30).

Regarding claims 39 and 42: The clamp 50a, 50 and 50' (first means) has at least one moveable element that causes it to move up and down according to col. 1 lines 17-27 and col. 3 lines 22-32.

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Regarding claims 40 and 41: Lee also teaches a clamp 50a (Fig. 2) and 50' (Fig. 4) both are annular (ring) types.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Satoh.

The teachings of Satoh were discussed above. Satoh teaches that the pins 12 are made of a ceramic material, but fails to teach that they are specifically constructed of the materials listed in claim 7 of the present invention. Satoh further teaches that the material of construction of the pins is a material with a small coefficient of thermal expansion with high resistance to fluorine active species. The material of construction of the pins is a matter of optimization. One of ordinary skill in the art at the time of the claimed invention would have chosen any of the materials listed with the motivation to use a material that will withstand the harsh chemical and physical environment of semiconductor manufacturing. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to use any of the materials listed in claim 7 of the present invention.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kurita or Asakura. The teachings of Kurita or Asakura were discussed above. Both fail to teach the distance between the first and second platform is at least 10mm. It is well settled that the determination of

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optimum values of cause effectgive variables such as the distance between the platforms is within the skill of one practicing in the art, In re Boesch, 205 USPQ 215 (CCPA 1980). The motivation to design the platforms to meet this distance is that such a clearance between the two platforms allows the substrate to be cleared from one platform prior to being mounted on the next. Thus, it would have been obvious for one of ordinary skill in the art at the time of the claimed invention to design the platforms of Kurita or Asakura to have a clearance between each other of at least 10mm.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Regarding claims 1-11:

The prior art of Osada et al (US 5,569,350) was cited as it teaches a mechanism and method for mechanically removing a substrate. The apparatus comprises a pedestal 3 (second means) and a ring 9 (first means).

Regarding claims 38-43:

The prior art of Nguyen et al (US 2004/0261722) was cited as it teaches a first means shield 151 (ring) and a second means workpiece support 130 used in a reaction chamber wherein the first comprises a support ring/slip ring and the second ring comprises a susceptor.

The prior art of Green et al (US 6,533,868) was cited as it teaches a deposition apparatus comprising an annular (ring-shaped) shield (first means) and a second means susceptor 13. The first means comprises a moveable element as illustrated in Figs. 7 and 8.


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The prior art of Langen (US 6,435,200) was cited as it teaches a first means ring 4 (supports the edge of the substrate) and a second means pins 25 (supports the backside of the substrate).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sylvia R. MacArthur whose telephone number is 571-272-1438. The examiner can normally be reached on M-F during the hours of 8:30 a.m. and 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on 571-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Sylvia R MacArthur
Patent Examiner
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August 1, 2006